Financial institutions' funding cost

Financial institutions' funding cost: do capital and risk-taking matter?

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Abstract

This study shows that the relative amount of capital and risk-taking compared to peers has influence on the funding cost of financial institutions. This suggests that these two factors could work as tools for achieving financial stability by means of self-regulatory practices given that financial institutions would have incentives to increase capital and refrain from taking excessive risk. Besides contributing to the policy-making debate on the viability of market discipline in banking regulation, this paper also opens avenues for further investigations in this area.

JEL Codes: G21, G28.

Keywords: Funding cost; bank capital; risk-taking.

1. Introduction

Arguments supporting the pertinence of market discipline in the banking system imply, among other issues, that financial institutions would have incentives to hold more capital and avoid excessive risk-taking. One of the reasons for this would be the possible reduction in funding cost (e.g. interest rates paid to depositors and other debtholders). The literature dealing with either market discipline or funding cost does not present empirical evidence of the simultaneous importance of capital and risk-taking in this context. The former stream of studies has not specifically investigated the two aforementioned factors[1,2,3] while the latter has shown a link between bank solvency (which involves capital) and funding cost but has not disentangled the specific roles of capital and risk-taking in a same framework[4,5,6,7,8].

The lack of empirical evidence showing the potential impact of capital holdings and risk-taking behaviour on funding costs in banks is likely due to the endogenous nature of the variables considered. That is, capital ratios and risk-taking may be driven by omitted factors that also affect funding costs. This paper contributes to fill this gap in the literature by using exogenous indicators of financial institutions' capital ratios and risk-taking in comparison with their peers to investigate whether higher capital levels and less risk-taking lead to lower funding costs. In general, this possibility is confirmed by the empirical results presented ahead, which therefore support market discipline arguments in favour of self-regulation in banking (at least as far as funding costs are concerned).

This study is of interest especially to bankers and financial regulators. The former can learn whether increasing capital ratios and reducing risk-taking vis-à-vis their competitors could actually result in lower funding costs. The latter can use the empirical evidence presented here to support decisions regarding the need of more or less strict capital regulation.

2. Data and method

The sample used consists of annual data from January 1990 to December 2018 for 17,430 active and inactive U.S. deposit-taking institutions (commercial banks, savings banks, and savings and loan associations). This refers to all institutions in the S&P Global Market Intelligence (SNL) platform with the data necessary for the analyses.

Since depositors and other debtholders could evaluate financial institutions following alternative criteria, different exogenous ranking measures regarding capital level and risk-taking are built. The empirical exercise initially considers indicators given by the percentiles (rank-order positions) of institution *i*'s capital ($CapInd_{i,t}^{perc}$) and risk-taking ($RiskInd_{i,t}^{perc}$) at time *t* in the respective distributions of the banking sector. This implies that debtholders would compare the relative position of financial institutions in terms of capital holdings and risk taken when deciding the return they would require in light of the risk faced. Additional indicators following other comparison rules are tested in robustness analyses.

Apart from these measures comprising the whole banking system (as if every institution was compared nationwide), for each factor, capital and risk-taking, specific measures for subsets of institutions clustered by primary regulator and FDIC supervisory region are also built. In order to ease the presentation of the results, these indicators have an additional superscript 'sim', which stands for similar institutions. Thus, $CapInd_{i,t}^{perc,sim}$ and $RiskInd_{i,t}^{perc,sim}$ refer respectively to the position of bank *i*'s capital holdings and risk-taking in the rankings of institutions similar to it.

Funding cost is estimated according to the following model:

$$FC_{i,t} = \beta_0 + \beta_1 CapInd_{i,t-1} + \beta_2 RiskInd_{i,t-1} + \beta_3 Size_{i,t-1} + \beta_4 IntInc_{i,t-1} + \beta_5 DepRatio_{i,t-1} + \beta_6 NPL_{i,t-1} + \beta_7 Bail\_in_{i,t} + \mu_i + \tau_t + \varepsilon_{i,t},$$

where the subscripts *i* and *t* represent bank *i* and time (year) *t*. For convenience, the subscripts *i, t* and *t-1* are not included in the description of the variables ahead. μ and τ indicate bank- and time-fixed effects, respectively[9]. ε is the error term. The dependent variable *FC* is one of four types of funding cost: cost of interest-bearing deposits (*CD*, the total cost of deposits divided by the average volume of interest-bearing deposits), cost of interest-bearing borrowings (*CB*, the total interest expense on borrowings divided by average interest-bearing debt excluding deposits), cost of interest-bearing liabilities (CL, the total interest expense as a percent of the average of all interest-bearing liabilities, including deposits and the other types of debt), and cost of funds (CF, the total interest expense divided by the sum of the average of all interest-bearing liabilities and noninterest-bearing deposits).

$CapInd$ and $RiskInd$, the main covariates of interest, refer to one of the variants of the capital holdings and risk-taking indicators, respectively. In the first measure, the capital factor observed by debtholders is represented by total equity divided by total assets. The second measure, a proxy of banks' risk-taking, is calculated as risk-weighted assets divided by total assets.

Other factors that could impact banks' funding cost are also considered. *Size* (the natural logarithm of total assets), for instance, could affect funding cost due to the market expectation of reduced risk in the case of institutions perceived as too-big-to-fail. *IntInc* (interest income received divided by average assets) could impact the resources available for the payment of interest on debt. *DepRatio* (ratio of deposits to total assets) helps in checking whether debt composition plays any role in the interest paid by institutions. For example, it could be the case that banks relying more on deposits as a source of funding need (are willing) to pay more for them. *NPL* (non-performing loans divided by total assets) would show if losses interfere with the interest rates institutions agree to pay on their deposits. These independent variables are lagged one period behind the dependent variable not only to rule out the possibility of reverse

causality but also to represent the fact that debtholders make decisions on their investments using information made available at the end of the previous period (year). Given that the Dodd-Frank Wall Street Reform and Consumer Act of January 2010 created the possibility of bail-ins, a *Bail_in* dummy is included in the model (equal to 1 for years 2010 onwards and 0 otherwise) with a view to controlling for the impact of this possibility on funding costs.

Except for the ranking indicators and the *Bail_in* dummy, all the other accounting variables are winsorised at the 1st and 99th percentiles to avoid distorted results due to outliers.

The time-fixed effects aim at capturing factors possibly changing over time and equally affecting funding costs of all banks in each period. This could be the case of, for instance, macroeconomic factors (inflation, GDP growth, risk-free rate, etc.) and regulatory events(10).

The bank-fixed effects refer to non-time-varying banks' features possibly driving funding cost. It is important to note that unobserved time-varying banks' characteristics would not impact the results because, by definition, the main independent variables (ranking indicators) are not related to those characteristics. Given that any version of the indicators regarding bank *i* is not exclusively determined by the capital holdings and risk-taking of that particular bank but greatly depends on all the other banks, those measures are independent of unobserved factors of bank *i* (e.g. reputation or management capability) impacting its costs of funding. Therefore, the conclusions of the analyses presented show a direct effect of the indicators on the funding costs analysed.

3. Results and discussions

The summary statistics of the data used in the analyses can be found in Table 1. The values presented do not indicate any important issues that could have affected the study's results. Table 2 shows the correlations among the variables, which do not suggest the possibility of severe multicollinearity. The few pairs that exhibit relatively high correlations refer to variables

not simultaneously included in a same regression (either two dependent variables or two ranking indicators not used together).

[Insert Tables 1 and 2 here]

The baseline results are presented in Table 3, where Panels A, B and C refer to the whole sample, small institutions and large institutions, respectively. In general, deposit-taking institutions with less capital than their peers in a year tend to have higher funding costs over the subsequent year. Costs of deposits are an exception for small institutions and when analysing the whole sample(11). In the former case, the coefficient of the capital ranking indicator is negative as expected but not significant. These specific results are therefore driven by small institutions and suggest that their depositors (most of them small, unsophisticated ones) do not take banks' capital levels into account when accepting interest rates paid on their deposits. Nevertheless, as shown in Panel C, capital levels remain important to large banks regarding this particular measure of funding cost.

In terms of relative risk-taking, except for costs of funds in large institutions, the higher the risk taken in a period, the higher the interest rates paid by institutions in the next period. Assuming that banks pay as little as possible in order to attract the funding necessary for their operations, these results indicate that risk-taking is seen as a signal of potential distress in the future. Hence, debtholders require higher return to invest in riskier institutions.

In sum, the results suggest that both capital ratio and risk-taking matter in terms of funding costs. Using the most comprehensive measure (cost of funds) and ranking indicators ($CapInd_{i,t}^{perc}$ and $RiskInd_{i,t}^{perc}$) for the whole sample as an example, it can be seen that going up one position in the capital ranking or going down one position in the risk-taking ranking

would lead to a reduction of 0.10% or 0.46% per year in funding costs, respectively – see column (7) in Table 3.

[Insert Table 3 here]

4. Robustness tests

Instead of looking at capital levels and risk-taking separately, an alternative would be to consider the ratio of capital to risk-taking as a possible factor used by debtholders to compare banks and decide on the acceptable return. The coefficients of the capital/risk-taking ranking indicator are negative and significant for all funding cost measures (see Table 4, where Panels A, B and C refer to the whole sample, small institutions and large institutions, respectively). This is in line with the main baseline results in the previous section and suggests that, by increasing capital in relation to the risk taken more than its competitors do, a bank can achieve lower funding costs.

[Insert Table 4 here]

A different cut-off in terms of total assets (U$ 3 billion) to classify financial institutions as small or large was tested. The results confirm all initial findings.

The potential impact of the Global Financial Crisis (GFC) on the original results is tested in further analyses where the sample period is split into pre-GFC (before 2008) and post-GFC (after 2008). The results concerning risk-taking are confirmed for both periods as seen in Panels A and B of Table 5. When it comes to capital ratios, the baseline findings for most of the cost measures only match those of the post-crisis period, suggesting that the relative position of capital levels have only become important after the GFC when depositors and investors became

aware that the level of capital held by many financial institutions could not be sufficient to cover their losses. Hence, in the post-crisis period, those institutions with relatively low capital levels have been required to pay higher funding costs. The cost of borrowings is the only type of debt for which the initial results remain valid in both periods.

[Insert Table 5 here]

Additional ranking indicators are built based on the distance between the capital ratio and risk-taking of an institution in the respective mean and the median in the banking system. As before, these measures are calculated for the whole system and separately for institutions overseen by a same primary regulator and in the same FDIC region. No pattern was identified in these additional analyses, indicating that these rankings are not suitable to show the presence or the absence of a relationship between capital ratios or risk-taking positions and funding costs.

5. Conclusions

This paper shows evidence that the level of capital holdings and risk-taking in financial institutions compared to their peers affects funding costs. Higher positions in the capital ranking and lower positions in the risk-taking ranking lead to lower funding costs. This suggests that financial institutions would have incentives to increase their capital ratios and reduce excessive risk-taking with a view to reduce their funding costs. This adds to the literature supporting the relevance of self-regulatory strategies such as Hovakimian and Kane[(1)], Barth et al.[(2)], and Flannery and Rangan[(3)] .

Another contribution of this study is to present new questions whose answers would help financial institutions and regulators to understand unexplored issues concerning funding costs. For instance, it is recognised that the discussion above does not explain a few differences found

across some the variables such as the fact that the cost of deposits is impacted by the position in the risk-taking ranking but not in the capital ranking. In this sense, the results reported here point to specific issues that deserve future analyses in this field.

References and Notes

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9. Joint Wald tests for the coefficients of the time (year) dummies are run. The null hypothesis (the coefficients for all years are jointly equal to zero) is rejected (p-value < 0.0001) indicating that time fixed effects are needed.

10. For all dependent variables (types of funding costs), the null hypothesis of the Wald test for the coefficients of the time (year) dummies is rejected (p-value < 0.0001), which indicates the need for time fixed effects in the models.

11. For small institutions, this exception also happens with one of the ranking indicators in the analyses of liabilities costs, which has interest-bearing deposits as one of their key components (as opposed to costs of borrowings that exclude deposits or costs of funds that have the importance of interest-bearing deposits reduced due to the inclusion of other non-interest-bearing debt).

Table 1. Summary statistics

Variable	Obs	Mean	Median	Std Dev	Min	Max
CD	276,612	0.0281	0.0304	0.0185	0.0000	0.0761
CB	276,339	0.0275	0.0226	0.0299	0.0000	0.0741
CL	276,596	0.0287	0.0311	0.0185	0.0032	0.0767
CF	276,607	0.0281	0.0290	0.0177	0.0021	0.0825
Ind^{perc}*(Cap)*	276,616	0.5001	0.5000	0.2887	0.0001	1.0000
Ind^{perc}*(Risk)*	276,616	0.5001	0.5000	0.2887	0.0001	1.0000
$Ind^{perc,sim}$*(Cap)*	276,616	0.5017	0.5015	0.2887	0.0005	1.0000
$Ind^{perc,sim}$*(Risk)*	276,616	0.5017	0.5015	0.2887	0.0005	1.0000
Ind^{perc}*(Cap/Risk)*	274,408	0.5001	0.5000	0.2887	0.0001	1.0000
$Ind^{perc,sim}$*(Cap/Risk)*	274,408	0.5017	0.5015	0.2887	0.0005	1.0000
Size	276,616	11.6507	11.5064	1.3775	8.6199	17.4991
IntInc	276,616	0.0568	0.0617	0.0263	0.0000	0.1223
DepRatio	276,604	0.7518	0.8552	0.2737	0.0000	0.9561
NPL	276,616	0.0087	0.0036	0.0147	0.0000	0.1532
Bail_in	276,616	0.2324	0.0000	0.4224	0.0000	1.0000

Obs is the number of observations. Std Dev, Min and Max stand for standard deviation, minimum and maximum, respectively. *CD* is the cost of interest-bearing deposits; *CB* is the cost of interest-bearing borrowings; *CL* is the cost of interest-bearing liabilities; *CF* is cost of funds; Ind^{perc}*(Cap)* and Ind^{perc}*(Risk)* are the capital and risk indicators for the whole banking system, respectively; $Ind^{perc,sim}$*(Cap)* and $Ind^{perc,sim}$*(Risk)* are the capital and risk indicators for similar institutions, respectively; Ind^{perc}*(Cap/Risk)* and $Ind^{perc,sim}$*(Cap/Risk)*, used in robustness tests, are the risk indicators based on the ratio of capital to risk-taking considering the whole banking system and similar institutions, respectively. The method of calculation of the previous variables are presented in Section 2. Size is the natural logarithm of total assets; *IntInc* is the interest income received on assets divided by average assets; *DepRatio* is the ratio of deposits to total assets; *NPL* is the ratio of non-performing loans to total assets; *Bail_in* is a dummy indicating the years when bail-in became a possibility.

Table 2. Correlation across the main variables used in the analyses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) *CD*	1.0000														
(2) *CB*	0.2738	1.0000													
(3) *CL*	0.9934	0.2999	1.0000												
(4) *CF*	0.6916	0.3480	0.6920	1.0000											
(5) Ind^{perc}*(Cap)*	-0.0485	-0.1552	-0.0546	-0.0286	1.0000										
(6) Ind^{perc}*(Risk)*	0.0879	0.1649	0.0895	0.0921	-0.1435	1.0000									
(7) $Ind^{perc,sim}$*(Cap)*	-0.0478	-0.1523	-0.0530	-0.0383	0.9764	-0.1592	1.0000								
(8) $Ind^{perc,sim}$*(Risk)*	0.0861	0.1620	0.0895	0.0847	-0.1621	0.9423	-0.1647	1.0000							
(9) Ind^{perc}*(Cap/Risk)*	-0.0743	-0.2010	-0.0796	-0.0601	0.8025	-0.6517	0.7953	-0.6363	1.0000						
(10) $Ind^{perc,sim}$*(Cap/Risk)*	-0.0721	-0.1947	-0.0776	-0.0639	0.7968	-0.6201	0.8138	-0.6497	0.9742	1.0000					
(11) *Size*	-0.1492	0.1511	-0.1291	-0.1915	-0.2103	0.1927	-0.1976	0.2140	-0.2654	-0.2648	1.0000				
(12) *IntInc*	0.3258	0.1564	0.3149	0.4729	-0.0360	0.3038	-0.0837	0.2255	-0.1946	-0.1888	-0.1859	1.0000			
(13) *DepRatio*	-0.0505	-0.0545	-0.0713	-0.0573	-0.0920	0.2352	-0.1340	0.1536	-0.1736	-0.1652	-0.0846	0.6726	1.0000		
(14) *NPL*	-0.1036	0.0075	-0.1024	-0.0772	-0.1277	0.1502	-0.1149	0.1483	-0.1860	-0.1711	0.1204	-0.0962	-0.0112	1.0000	
(15) *Bail_in*	-0.5996	-0.2414	-0.5995	-0.6492	0.0000	0.0000	0.0005	0.0005	0.0000	0.0005	0.2360	-0.3596	0.1135	0.2079	1.0000

CD is the cost of interest-bearing deposits; *CB* is the cost of interest-bearing borrowings; *CL* is the cost of interest-bearing liabilities; *CF* is cost of funds; Ind^{perc}*(Cap)* and Ind^{perc}*(Risk)* are the capital and risk indicators for the whole banking system, respectively; $Ind^{perc,sim}$*(Cap)* and $Ind^{perc,sim}$*(Risk)* are the capital and risk indicators for similar institutions, respectively; Ind^{perc}*(Cap/Risk)* and $Ind^{perc,sim}$*(Cap/Risk)*, used in robustness tests, are the risk indicators based on the ratio of capital to risk-taking considering the whole banking system and similar institutions, respectively. The method of calculation of the previous variables are presented in Section 2. Size is the natural logarithm of total assets; *IntInc* is the interest income received on assets divided by average assets; *DepRatio* is the ratio of deposits to total assets; *NPL* is the ratio of non-performing loans to total assets; *Bail_in* is a dummy indicating the years when bail-in became a possibility. All coefficients are statistically significant at the 1% level.

Table 3. The impact of capital and risk-taking indicators on different measures of funding cost

Dependent variable	*Cost of Deposits*		*Cost of Borrowings*		*Cost of Liabilities*		*Cost of Funds*	
Ranking indicators	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: whole sample							
$CapInd_{t-1}$	-0.0002	-0.0002	-0.0080***	-0.0077***	-0.0006***	-0.0005***	-0.0010***	-0.0010***
	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$RiskInd_{t-1}$	0.0054***	0.0046***	0.0092***	0.0079***	0.0055***	0.0047***	0.0046***	0.0038***
	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
No. of Observations	259,150	259,150	258,904	258,904	259,134	259,134	259,150	259,150
No. of banks	17,389	17,389	17,388	17,388	17,388	17,388	17,389	17,389
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8253	0.8248	0.1678	0.1667	0.8224	0.8221	0.7681	0.7675
	Panel B: small institutions							
$CapInd_{t-1}$	0.0001	0.0001	-0.0067***	-0.0065***	-0.0002*	-0.0001	-0.0006***	-0.0006***
	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$RiskInd_{t-1}$	0.0054***	0.0045***	0.0088***	0.0077***	0.0054***	0.0046***	0.0046***	0.0038***
	(0.0002)	(0.0002)	(0.0005)	(0.0004)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
No. of Observations	241,079	241,079	240,845	240,845	241,066	241,066	241,077	241,077
No. of banks	16,768	16,768	16,767	16,767	16,767	16,767	16,768	16,768
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8250	0.8242	0.1653	0.1643	0.8204	0.8197	0.7661	0.7652

(continued)

Table 3 (continued). The impact of capital and risk-taking indicators on different measures of funding cost

Dependent variable	*Cost of Deposits*		*Cost of Borrowings*		*Cost of Liabilities*		*Cost of Funds*	
Ranking indicators	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel C: large institutions							
$CapInd_{t-1}$	-0.0011***	-0.0011***	-0.0036***	-0.0029***	-0.0020***	-0.0019***	-0.0017***	-0.0017***
	(0.0004)	(0.0004)	(0.0010)	(0.0010)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
$RiskInd_{t-1}$	0.0032***	0.0029***	0.0057***	0.0058***	0.0033***	0.0030***	0.0007	0.0006
	(0.0009)	(0.0009)	(0.0016)	(0.0015)	(0.0010)	(0.0009)	(0.0005)	(0.0005)
No. of Observations	18,071	18,071	18,059	18,059	18,068	18,068	18,073	18,073
No. of banks	2,118	2,118	2,118	2,118	2,118	2,118	2,118	2,118
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8510	0.8512	0.5365	0.5376	0.8671	0.8675	0.8330	0.8328

This table shows the regression results of the baseline model. Panels A, B and C refer to the whole sample, small institutions (total assets < U$ 1 billion) and large institutions (total assets > U$ 1 billion), respectively. Four dependent variables are considered: Cost of Deposits in columns (1) to (2), Cost of Borrowings in columns (3) and (4), Cost of Liabilities in columns (5) and (6), and Cost of Funds in columns (7) and (8). Their definitions are presented in Section 2. For each of them, two types of ranking indicators are used: Ind^{perc} in columns (1), (3), (5) and (7) represents the capital and the risk indicators based on the percentiles of the respective measures of interest in the distribution of all institutions; $Ind^{perc,sim}$ in columns (2), (4), (6) and (8) differs from the previous measure in that it is calculated for subgroups of institutions with a same primary regulator and located in a same FDIC regulatory region. Details on the calculations of these indicators are presented in Section 2. $CapInd_{t-1}$ and $RiskInd_{t-1}$ are our main independent variables and refer to capital and risk-taking indicators, respectively. The control variables, whose coefficients are omitted due to space constraints are bank size, the ratio of interest rate income to average assets, the ratio of deposits to total assets, and the amount of non-performing loans divided by total assets, and a dummy for years when bail-ins have become possible. All the independent variables are lagged one period in comparison with the dependent variable in order to preclude the possibility of reverse causality. The coefficient of the intercept term is also omitted. Robust standard errors, clustered by banks, are reported in parentheses below the coefficient estimates. To help with a quick assessment of the significance of the coefficients, we follow the convention in most papers and use *** and * to indicate statistical significance at the 1% and 10% levels, respectively. ** is not used given that there is no coefficient significant at the 5% level.

Table 4. The impact of the ratio of capital to risk-taking indicators on different measures of funding cost

Dependent variable	*Cost of Deposits*		*Cost of Borrowings*		*Cost of Liabilities*		*Cost of Funds*	
Ranking indicators	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: whole sample							
Cap_to_Risk_Ind$_{t-1}$	-0.0018***	-0.0016***	-0.0104***	-0.0097***	-0.0021***	-0.0019***	-0.0022***	-0.0020***
	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
No. of Observations	256,943	256,943	256,697	256,697	256,697	256,697	256,943	256,943
No. of banks	17,389	17,389	17,388	17,388	17,388	17,388	17,389	17,389
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8707	0.8704	0.1835	0.1815	0.8761	0.8758	0.8231	0.8228
	Panel B: small institutions							
Cap_to_Risk_Ind$_{t-1}$	-0.0017***	-0.0015***	-0.0093***	-0.0088***	-0.0019***	-0.0017***	-0.0019***	-0.0017***
	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
No. of Observations	238,965	238,965	238,731	238,731	238,952	238,952	238,963	238,963
No. of banks	16,765	16,765	16,764	16,764	16,764	16,764	16,765	16,765
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8733	0.8729	0.1799	0.1783	0.8766	0.8762	0.8245	0.8241

(continued)

Table 4 (continued). The impact of the ratio of capital to risk-taking indicators on different measures of funding cost

Dependent variable	*Cost of Deposits*		*Cost of Borrowings*		*Cost of Liabilities*		*Cost of Funds*	
Ranking indicators	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel C: large institutions							
Cap_to_Risk_Ind$_{t-1}$	-0.0013***	-0.0013***	-0.0035***	-0.0031***	-0.0019***	-0.0018***	-0.0016***	-0.0016***
	(0.0004)	(0.0004)	(0.0011)	(0.0010)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
No. of Observations	17,978	17,978	17,966	17,966	17,975	17,975	17,975	17,975
No. of banks	2,118	2,118	2,118	2,118	2,118	2,118	2,118	2,118
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.8675	0.8674	0.5543	0.5539	0.8879	0.8879	0.8469	0.8470

This table shows the regression results of an alternative model where the main independent variable is an indicator based on the ranking of the capital to risk-taking ratio. Panels A, B and C refer to the whole sample, small institutions (total assets < U$ 1 billion) and large institutions (total assets > U$ 1 billion), respectively. Four dependent variables are considered: Cost of Deposits in columns (1) to (2), Cost of Borrowings in columns (3) and (4), Cost of Liabilities in columns (5) and (6), and Cost of Funds in columns (7) and (8). Their definitions are presented in Section 2. For each of them, two types of ranking indicators are used: Ind^{perc} in columns (1), (3), (5) and (7) represents the capital and the risk indicators based on the percentiles of the respective measures of interest in the distribution of all institutions; $Ind^{perc,sim}$ in columns (2), (4), (6) and (8) differs from the previous measure in that it is calculated for subgroups of institutions with a same primary regulator and located in a same FDIC regulatory region. Details on the calculations of these indicators are presented in Section 2. *Cap_to_Risk_Ind*$_{t-1}$, the ratio of capital to risk-taking, is our main independent variable. The control variables, whose coefficients are omitted due to space constraints are bank size, the ratio of interest rate income to average assets, the ratio of deposits to total assets, the amount of non-performing loans divided by total assets, and a dummy for years when bail-ins have become possible. All the independent variables are lagged one period in comparison with the dependent variable in order to preclude the possibility of reverse causality. The coefficient of the intercept term is also omitted. Robust standard errors, clustered by banks, are reported in parentheses below the coefficient estimates. To help with a quick assessment of the significance of the coefficients, we follow the convention in most papers and use *** to indicate statistical significance at the 1% level even if ** and * are not used (as there are no coefficients significant at the 5% and 10% levels).

Table 5. The impact of capital and risk-taking indicators on different measures of funding cost before and after the Global Financial Crisis

Dependent variable	*Cost of Deposits*		*Cost of Borrowings*		*Cost of Liabilities*		*Cost of Funds*	
Ranking indicators	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$	Ind^{perc}	$Ind^{perc,sim}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Pre-crisis							
$CapInd_{t-1}$	0.0008***	0.0008***	-0.0077***	-0.0073***	0.0005***	0.0005***	-0.0001	<0.0001
	(0.0001)	(0.0001)	(0.0006)	(0.0006)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$RiskInd_{t-1}$	0.0043***	0.0035***	0.0099***	0.0081***	0.0045***	0.0038***	0.0039***	0.0031***
	(0.0002)	(0.0002)	(0.0006)	(0.0005)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
No. of Observations	178,655	178,655	178,450	178,450	178,649	178,649	178,656	178,656
No. of banks	17,050	17,050	17,049	17,049	17,049	17,049	17,050	17,050
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.5456	0.5436	0.1101	0.1058	0.5348	0.5330	0.4347	0.4315
	Panel B: Post-crisis							
$CapInd_{t-1}$	-0.0005***	-0.0004***	-0.0034***	-0.0032***	-0.0008***	-0.0007***	-0.0010***	-0.0009***
	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$RiskInd_{t-1}$	0.0014***	0.0010***	0.0010**	0.0013***	0.0011***	0.0008***	0.0009***	0.0006***
	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
No. of Observations	72,259	72,259	72,223	72,223	72,251	72,251	72,258	72,258
No. of banks	8,078	8,078	8,078	8,078	8,078	8,078	8,078	8,078
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Overall R-squared	0.4880	0.4826	0.1126	0.1113	0.4998	0.4951	0.4551	0.4503

This table presents the results of the baseline model for pre- and post-crisis subsamples. The four dependent variables and the two ranking indicators are the same ones shown in Table 3 (see further explanations therein). *** and ** indicate statistical significance at the 1% and 5% levels, respectively. None of the coefficients is significant at the 10% level, so the single star * is not used.